

SUMMARY OF INDIAN STANDARD

IS 277:2018

GALVANIZED STEEL STRIPS AND SHEETS (PLAIN AND CORRUGATED) — SPECIFICATION

(SEVENTH REVISION)

The French inventor **Stanislas Sorel** is credited with the invention of galvanization. He had patented a process of cleaning steel and dipping it in a bath of molten zinc to provide protection against atmospheric corrosion (rusting) which he termed the “Galvanic method”. The process, which later was termed “**Galvanization**”, can be done, *a la* Sorel, through a simple hot-dip process i.e. dipping the steel into a molten bath of zinc or through electro galvanizing, an electrochemical process. The **zinc coating** protects the sheets and strips from **corrosion** (including **rust**), when exposed to corrosive atmospheres.

Galvanized steel sheets and strips (commonly known as **GI sheets** or **Galvanized iron** sheets) are used for different applications such as **panelling, roofing, applications requiring lock forming** etc. where **corrosion resistance** is required. Such sheets and strips can be **plain or corrugated** depending upon the application. Providing corrugations adds strength and makes the sheets easier to handle and install, which is why corrugated sheets are commonly used for roofing applications.

Users have the following expectations from good quality galvanized steel sheets and strips:

- They should have adequate mechanical **strength and ductility** to withstand the different loading conditions encountered during use.
- They should have sufficient **corrosion resistance** to withstand the corrosive conditions expected during use.
- They should have **good surface finish** and should
- They should be of **uniform and consistent dimensions (width, thickness etc.) as per customer requirements**.
- In case of corrugated sheets, the depth and pitch of corrugations should be such that it imparts **optimum strength and stability**.
- They should be reasonably **free from defects**

The Indian Standard IS 277:2018 covers the requirements of plain galvanized steel sheets and strips (coils) and corrugated galvanized steel sheets (This standard only covers steel galvanized through a hot-dip process whereas another standard IS 17404:2020 covers Electro Galvanized Hot Rolled and Cold Reduced Carbon Steel Sheets and Strips).

IS 277:2018 helps ensure the quality of galvanized steel sheets and strips by addressing the above expectations, as follows:

- It specifies the required chemical composition and mechanical properties for the base steel sheets, thereby ensuring **mechanical strength and ductility**.
- It specifies the minimum mass of **zinc coating** required so that the product is sufficiently **corrosion resistant** (It also provides guidance regarding the manner of galvanizing the steel and prescribes the requirements for purity of the zinc ingots used for the coating)
- It specifies the different coating conditions/finish types depending upon the treatment applied to the sheets after coating, to ensure **good surface finish**.
- It specifies the permitted dimensional tolerances on length, width, thickness of the sheets and strips, to ensure **uniformity in dimensions**.
- It prescribes the **number, depth and pitch of corrugations** in case of corrugated sheets for **strength and stability**.
- It specifies requirements for **freedom from defects** for the sheets and strips.

In addition to the above, the standard also lists the precautions to be followed for storage and transportation as well as the requirements for packing and marking the product.

To control the quality of galvanized steel sheets, the Ministry of Steel, Government of India has issued the **Steel and Steel Products (Quality Control) Order** mandating that only those galvanized steel sheets and strips (plain and corrugated) which meet the requirements of IS 277:2018 and bear the **BIS Standard Mark (ISI Mark)**, are permitted to be produced, sold, distributed or imported into India.

Therefore, customers who value **quality** should always choose **ISI Marked** galvanized sheets and strips (plain and corrugated) which are produced by a **BIS certified manufacturer** to meet the requirements of the Indian Standard **IS 277:2018**.